

2/12/18 "Intelligence plus character, that is the true goal of education."-Martin Luther King Jr.

HW: "2017 A2 L34 Finding Equations of Polynomials" #2, 4, 6  
Test 1 on Thursday 2/15

AIM: How do we write Polynomial Equations??

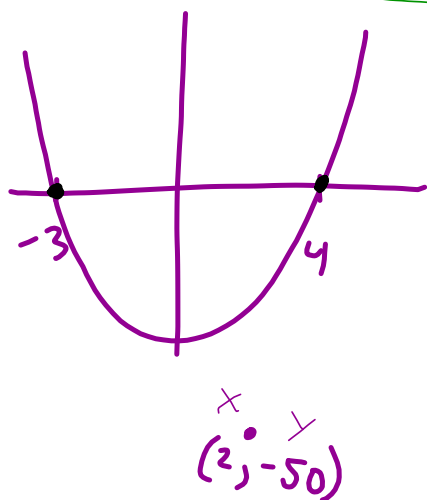
Warm Up: (Do Now #3 on the handout)

Find an equation for a cubic polynomial that has zeros of  $-2$ ,  $1$  and  $3$ .

Factors are  $(x+2)$   $(x-1)$   $(x-3)$

$$P(x) = (x+2)(x-1)(x-3)$$

1. Determine the equation of a quadratic function whose roots are  $-3$  and  $4$  and which passes through the point  $(2, -50)$ .



Factors:  $(x+3)(x-4)$

$$y = a(x+3)(x-4)$$

$$-50 = a(2+3)(2-4)$$

$$= a(5)(-2)$$

$$\frac{-50}{-10} = \frac{-10a}{-10}$$

$$5 = a$$

$$y = 5(x+3)(x-4)$$

3. Create the equation of a cubic, ~~that has a double zero at  $-2$  and another zero at  $4$~~ , that has a double zero at  $-2$  and another zero at  $4$ .

4. The cubic has a y-intercept of  $16$ .

$$(x-4)$$

$$(0, 16)$$

$$(x+2)(x+2)$$

OR

$$(x+2)^2$$

$$y = a(x+2)^2(x-4)$$

$$16 = a(0+2)^2(0-4)$$

$$16 = a(2)^2(-4)$$

$$\frac{16}{-16} = \frac{-16a}{-16}$$

$$-1 = a$$

$$y = -1(x+2)^2(x-4)$$

7. Find the cubic polynomial whose graph passes through the points  $(2,0)$  and  $(4,6)$  and is tangent to the x-axis at the origin.

"bounces"  
exponent on factor  
is even

$$(x+0)(x+0)$$

OR

$$(x-0)(x-0)$$

OR

$$(x)(x)$$

OR

$$x^2$$

we need  
2 more  
zeros

point

$x=2$

$(x-2)$

$$y = a(x-2)(x^2)$$

$$6 = a(4-2)(4^2)$$

$$6 = a(2)(16)$$

$$\frac{6}{32} = \frac{32a}{32}$$

$$\frac{3}{16} = a$$

$$y = \frac{3}{16} x^2 (x-2)$$